

Application No.: 10/826,016

Docket No.: IIW-036

AMENDMENTS TO THE CLAIMS

Please amend claims 1-2, 4-7 and 15-19 as follows.

1. (currently amended) A method for exhausting a gas from an apparatus for cooling a fuel cell, which generates power by supplying air and a fuel gas, in which a cooling liquid is circulated between the fuel cell and a heat exchanger,

said method comprising: separating the fuel gas from the cooling liquid, mixing the separated gas with the air supplied to or exhausted from said fuel cell, and then exhausting the gas.

2. (currently amended) The method according to claim 1, wherein the fuel gas mixed with air supplied to the fuel cell is introduced into a cathode of the fuel cell.

3. (previously presented) An apparatus for cooling a fuel cell, which generates power by supplying air and a fuel gas, comprising a circulation passage for circulating a cooling liquid between the fuel cell and a heat exchanger,

a cooling liquid storage container, which stores at least a portion of the cooling liquid circulating within said circulation passage, and which communicates with said circulation passage via a gas drawing passage and via a passage for returning a cooling liquid,

wherein said cooling liquid storage container communicates with a supply air pipe, which supplies air into the fuel cell, or with an exhaust pipe, which exhausts the air from the fuel cell, via a signal pressure pipe, and

wherein the air incorporated into said signal pressure pipe from the supply air pipe side or from the exhaust air pipe side is pushed back towards said supply air pipe or said exhaust air pipe to be exhausted in said supply air pipe or said exhaust air pipe when the pressure of the gas separated from the cooling liquid flowing from the circulation passage through said gas drawing passage and stored in said cooling liquid storage container is higher than the pressure of the supply air within said supply air pipe or the pressure of the exhaust air within said exhaust air pipe.

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4. (currently amended) The apparatus according to Claim 3, ~~wherein~~ further comprising:

means for changing the pressure of the air supplied into the fuel cell through the supply air pipe or the pressure of the air exhausted from the fuel cell through the exhaust air pipe is ~~changed~~ whereby the gas is exhausted into said supply air pipe or said exhaust air pipe.

5. (currently amended) The apparatus according to Claim 4, wherein said means increase -the pressure within said signal pressure pipe ~~is increased~~ to be not less than a prescribed pressure and then returned to the stationary pressure.

6. (currently amended) The apparatus according to Claim 3, ~~wherein~~ further comprising:

means for changing the pressure of the air supplied into the fuel cell through the supply air pipe or the pressure of the air exhausted from the fuel cell through the exhaust air pipe ~~is changed~~ when the pressure difference between the pressure of the gas within said cooling liquid storage container and the pressure within the air within the supply air pipe or between said cooling liquid storage container and the pressure within the exhaust air ~~pie~~ pipe is not changed over a prescribed period.

7. (currently amended) The apparatus according to Claim 3, ~~wherein~~ further comprising:

means for changing the pressure of the air supplied to the fuel cell from the supply air pipe ~~is changed~~ when the fuel gas concentration within said cooling liquid storage container is not less than a prescribed concentration.

8. (original) The apparatus according to Claim 3, wherein the pressure of the air supplied to the fuel cell from the supply air pipe is changed when the fuel gas concentration within said cooling liquid storage container is considered to be increased.

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9. (previously presented) An apparatus for cooling a fuel cell, which generates power by supplying air and a fuel gas, comprising a circulation passage for circulating a cooling liquid between the fuel cell and a heat exchanger, and

a cooling liquid storage container, which stores at least a portion of the cooling liquid circulating within said circulation passage,

said cooling liquid storage container including

a liquid phase portion that communicates with said circulation passage via a gas drawing passage, and

a gas phase portion that communicates with a supply air pipe, which supplies air into said fuel cell via a flow-in pipe, and which mixes the gas separated from the cooling liquid within said liquid phase portion with the air flowing therein through said flow-in pipe from said supply air pipe.

10. (original) The apparatus according to Claim 9, wherein said gas phase portion possesses means for detecting a fuel gas, which detects the internal fuel cell concentration.

11. (original) The apparatus according to Claim 10, which possesses pressure control means, which pushes back the gas within said gas phase portion to said supply gas pipe or to an exhaust gas pipe from the fuel cell, when the fuel gas concentration within said gas phase portion is not less than a prescribed concentration.

12. (original) The apparatus according to Claim 11, wherein said pressure control means is means, which increases the pressure within said signal pressure pipe to be not less than a prescribed pressure and then returns the pressure to a stationary pressure.

13. (previously presented) An apparatus for cooling a fuel cell, which generates power by supplying air and a fuel gas, comprising a circulation passage for circulating a cooling liquid between the fuel cell and a heat exchanger, and

a cooling liquid storage container, which stores at least a portion of the cooling liquid circulating within said circulation passage,

said cooling liquid storage container including

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a liquid phase portion that communicates with said circulation passage via a gas drawing passage, and
a gas phase portion which communicates with a supply air pipe, which supplies air into said fuel cell via a flow-in pipe and via a flow-out pipe, and which mixes the gas separated from the cooling liquid within said liquid phase portion with the air flowing therein through said flow-in pipe from said supply air pipe, and returns the mixed gas into said supply air pipe via said flow-out pipe,

said flow-in pipe communicating with said supply air pipe at an upstream portion of a humidifier, which is provided on the way to said supply air pipe and which humidifies the air to be supplied to said fuel cell, and said flow-out pipe communicating with said supply air pipe at a downstream of said humidifier.

14. (original) The apparatus according to Claim 13, wherein said cooling liquid storage container possesses means for detecting a fuel gas, which detects the internal fuel cell concentration.

15. (currently amended) An apparatus for cooling a fuel cell, which generates power by supplying air and a fuel gas, comprising a circulation passage for circulating a cooling liquid between the fuel cell and a heat exchanger, and

a cooling liquid storage container, which stores at least a portion of the cooling liquid circulating within said circulation passage, communicates with said circulation passage via a gas drawing passage, and communicates with said circulation passage via a passage for returning a cooling liquid, and

an air pipe in which air supplied to or exhausted from said fuel cell flows, and said cooling liquid storage container including

a gas exhaust mechanism, which communicates with said air pipe via a ventilation pipe, and which exhausts the fuel gas in said cooling liquid storage container out of the system by a ventilation current flowing within said ventilation pipe.

16. (currently amended) The apparatus according to Claim 15, ~~wherein~~ further comprising:

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means for controlling a flow amount of said ventilation current ~~is controlled depending~~ upon the fuel gas concentration within said cooling liquid storage container.

17. (currently amended) The apparatus according to Claim 16, wherein said means ~~increase~~ a ventilation amount within said cooling liquid storage ~~is increased when the fuel gas~~ concentration within said cooling liquid storage container arrives at a prescribed concentration or more.

18. (currently amended) The apparatus according to Claim 17, wherein said gas exhaust mechanism exhausts the gas within said cooling liquid storage container ~~is exhausted by said gas exhaust mechanism,~~ when the pressure within said air pipe is increased whereby said fuel gas concentration within said cooling liquid storage container is decreased to a prescribed concentration.

19. (currently amended) The apparatus according to Claim 16, wherein said means ~~decrease the pressure within said cooling liquid storage container is decreased to increase the~~ flow amount of said ventilation current when the fuel gas concentration within said cooling liquid storage container arrives at a prescribed concentration or more.